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The 24 October 2006 Gemlik Earthquake (M=5.2)

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Gemlik is one of the major towns in the eastern Marmara region with large industrial areas. The population is around 75,000 and the town is located just on the southern branch of the North Anatolian Fault Zone (NAFZ) known as Iznik-Mekece fault. The Iznik-Mekece fault seemed to be very quiet and did not produce even moderate earthquakes for a long time. For this reason, the 24 October 2006 Gemlik earthquake (M=5.2) is very important for the region. The earthquake occurred offshore of Gemlik at the local time 17:00 and did not cause human losses. Some cracks were observed in weak buildings. The earthquake and its aftershocks were well recorded by the Armutlu Network, which has been installed by the Kocaeli University (Turkey) and the GeoForschungZentrum Potsdam (Germany) in the second half of 2005. The right lateral strike-slip mechanism (strike 14, dip 71, rake -12) of the Gemlik earthquake is consistent with the general characteristic of the Iznik-Mekece fault. Aftershocks are located within a N-S oriented rectangle with a width and length of 5 km and 10 km, respectively. This indicates that the N-S fault plane was ruptured rather than the E-W as could be expected from the general tectonics of the NAFZ. All aftershocks occurred at shallow depths of approximately 10 km. By using moment tensor inversion techniques of small and moderate aftershocks we would like to improve our understanding of the present day seismo-tectonics of the region. At present we are processing data and we believe that soon we will have more precise information about the tectonic structure of the region and a 3-D velocity structure of the studied area. We will present these preliminary results.